DOCUMENT RESUME

ED 358 115 TM 019 881

AUTHOR Grover, Burton L.
TITLE Trends in Published Meta-Analyses.
PUB DATE Apr 93
NOTE 22p.; Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA, April 12-16, 1993).
PUB TYPE Information Analyses (070) -- Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Comparative Analysis; Databases; *Effect Size; Literature Reviews; *Meta Analysis; *Publications; *Research Methodology; Scholarly Journals; Synthesis; *Trend Analysis
IDENTIFIERS Mean (Statistics)

ABSTRACT

Meta analytic procedures recommended by various authorities were the subject of a literature review designed not to discuss the relative merits of contrasting recommendations, but to find what is actually in the literature. The sample reviewed included 89 articles published between 1986 and 1992, from 2 journals and 2 information databases. Meta analyses were coded for a number of variables. Most reported the databases used to find the studies. The median number of studies synthesized by the data analysis was 48. About three-quarters of these reported collecting and aggregating mean differences. Of the 66 that examined mean differences, 55 calculated and reported these differences as standardized mean differences. Fifteen studies reported effect size, eight used the standard normal deviate, and eight used some other method. A large variety of statistical methods was reported for the analysis of the relationship of moderator variables with effect size. Forty-seven studies reported an overall test of homogeneity of effect sizes. One implication of the study for researchers is that, given the diversity of approaches to meta analysis, a good part of the potential audience may well prefer a meta analytic approach that differs from that chosen by the researcher. Five tables present information on trends in meta analysis. An appendix lists studies that appeared in the two main journals reviewed. (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

BURTON L. GROVER

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

TRENDS IN PUBLISHED META-ANALYSES

ED358115

Paper presented to the American Educational Research Association, Atlanta, Georgia, April 15, 1993

Burton L. Grover
Western Wash. Univ.
Bellingham, Wash.

TM 019881

TRENDS IN PUBLISHED META-ANALYSES

Paper Presented to The American Educational Research Association, Atlanta, Georgia, April 15, 1993

Burton L. Grover
Western Wash. Univ.
Bellingham, Wash.

The prominence of meta-analyses in the research literature in education, psychology, and other fields has become evident. Unless some unexpected change occurs, investigators and other students in almost all fields can expect to encounter meta-analytic methods, either as a producer or as a consumer of the research literature, for some time to come.

At least two sources of confusion currently complicate the study of meta-analytic methods. One is the differing conclusions reached by separate meta-analyses on the same or similar topic. The other is the variation in meta-analytic procedures which have been recommended by various authorities. The latter concern led to the study reported here.

Differences in recommended procedures concern increasingly varied aspects of meta-analysis. The most obvious variation is in how to compute and report effect size, differences which even if mathematically equivalent can complicate the task of understanding the literature. Other variations concern procedures for analysis of moderator variables (even whether to code moderator variables), the application of tests of homogeneity to the distribution of effect sizes, limitations on the number of effect sizes to come from a single study, the importance of including unpublished literature, if and what corrections to make of the effect size data, and whether to include a rating of methodological quality of individual studies as a moderator variable.

The present study was not designed to discuss the relative merits of contrasting recommendations but was intended to find out what is actually in the recent literature. Results of such a literature survey might possibly help one to decide who to believe if not who one **should** believe.

METHOD

Selecting Studies: The sample examined in this study consisted of 89 articles identified as meta-analyses and published between 1986 and 1992. They were taken from three sources, two of which are presumptive major sources of meta-analyses for psychologists and educators: (1) All articles identified as meta-analyses in the Review of Educational Research (RER) from 1986 through the first three issues of 1992, 18 in all; (2) all accessible articles identified as meta-analyses in the issues of the Psychological Bulletin (PB) from 1986 through 1991 (three issues missing during the search period), a total of

43; and (3) a group of 28 meta-analyses 1986-92 sampled from ERIC and PsychLIT and not published in either the RER or PB.

Coding Studies The following information was recorded for each study:

- publication source
- year of publication
- reference to previous meta-analysis on same topic
- if inclusion criteria were described
- data bases used
- number of studies synthesized
- nature of statistics aggregated and synthesized
- corrections, if any, made to individual effect sizes
- effect size formula used
- if individual studies were rated for quality
- presence of statistical significance tests for moderator variables
- statistical tests used for moderator variable analysis

Except for number of studies, all variables were coded as present or absent. Accordingly, some of the above variables were broken down into sub-categories, e.g., t-tests for the last item above (Table I).

Data Analysis: An appropriate procedure for analyzing the data beyond simple description was not obvious. Accordingly, the basic procedure was simply to tabulate the data and note the frequencies for each coded study characteristic. Cross-tabulating most of the variables with year of publication and publication source was a supplemental procedure.

RESULTS

The frequencies of all of the coded study features are presented in Table I. The distribution of the 89 sample meta-analyses by year and by publication source can be found in Table II. The Appendix contains the bibliographic citations of all the meta-analyses and how each was coded (last two pages of the Appendix).

Searching and Selecting Studies: Most meta-analyses in the study sample reported the data bases used for finding studies. The frequencies of reported use were as follows:

ERIC	34
PsychAbs/PsychLit/PsychINFO	50
Dissertation Abstracts	30
Medline	7
Other Computer	18

Most studies indicated that use of the above was supplemented by manual search and in some cases by personal corresondence or contact.

Seventy-three (82%) studies reported inclusion (or sometimes exclusion) criteria for the selection of studies. Usually these were specified quite clearly, but there were a few cases tough to call.

Number of Studies: The median number of studies synthesized by the meta-analyses in the sample was 48. The numbers ranged from six to 411. The latter was an outlier, for the next highest number was 172.

Moderator Variables: The coding of individual studies for potential moderator variables has normally been considered as an essential part of the meta-analytic process. This was done in 83 (93%) of the meta-analyses in the sample. Some of the exceptions were studies for which classification as a meta-analysis, rather than say a secondary data reanalysis, was questionable.

One of the noteworthy features of the original Smith and Glass meta-analysis (Glass, 1976) was to rate the quality of the individual studies and use that rating as a moderator variable rather than a basis for excluding studies. This practice was followed in only sixteen (18%) of the meta-analyses in the sample, and there was no statistically significant association of this practice with year of publication or publication source (Table III).

Types of Statistics Collected: Of the sample of 89 meta-analyses, about three-quarters (66) reported collecting and aggregating mean differences. Correlations were collected in sixteen (19%) of the studies. Twenty-four (27%) of the studies reported other statistics, such as proportions and in one instance variances, for a major part their syntheses. These numbers total more than 89 since some studies reported amassing more than one type of statistic.

There was a question whether a few of the studies in the sample should be considered as secondary data reanalyses and not meta-analytic. These were studies which synthesized raw data, usually from test-norming reports. Nonetheless, they were included and put in the "other" category indicated above.

Method of Calculating Effect Size: Of the sixty-six studies which examined mean differences, by far the large majority (55) calculated and reported mean differences as standardized mean differences, that is, the raw score difference between group means divided by a standard deviation of individual scores. Fifteen studies reported effect size as a correlation, eight used Z (standard normal deviate), and eight used some other method.

What to use as a denominator when computing standardized mean differences became an issue not long after Smith and Glass officially launched meta-analysis and proposed the use of the standard deviation of the control group. Whether because of the persuasiveness of the argument to use the pooled standard

deviation, because of the difficulty of finding and extracting the control group standard deviation, because of the editorial policy of the Psychological Bulletin which had the largest number of studies in the sample, or for some other reason, the majority of studies did **not** use the control group standard deviation. Of the twenty-two which did, only six were published after 1988, a significant drop-off (chi-square = 9.92, $p < .01$).

No other trends in the data about the various methods of reporting effect size were noted.

Statistical Analysis of Moderator Variables: A large variety of statistical methods were reported for the analysis of the relationship of moderator variables with effect size. Various studies reported more than one method, sometimes necessitated by the differences in the type of statistics collected and aggregated. Tallies of the various methods were as follows:

t tests	12
Analysis of variance (or an analog)	18
Significance of single correlations	11
Multiple regression	12
Successive homogeneity tests of subsets	21
Other	11
No significance test	9

The uses of the various tests were distributed fairly evenly over the surveyed years (Table IV), but it was noted that ANOVA procedures were more often used during the first part of the period while simple correlation and multiple regression were more frequent during the latter part.

In some cases where no statistical test of moderator variables was reported, the decision was deliberate because an overall test of homogeneity of effect sizes indicated no significant heterogeneity. (The overall test for homogeneity was somewhat arbitrarily counted as not a moderator variable test.)

Tests of Homogeneity: Forty-seven (52%) of the studies reported an overall test of homogeneity of effect sizes to see if there were significant differences among them which might be linked to moderator variables. The RER meta-analyses had a smaller proportion of these studies (six of eighteen or 33%), but this pattern was not statistically significant. However, there was a significant increase in the use of this test after 1988 (Table V).

DISCUSSION

Suggestions for further study, if there is merit in surveys of the current research literature, can just as well start with a Monday-morning quarterbacking attitude. With the benefit of hindsight, what would be done differently if this study were to begin now? The following ideas have come to mind, in no particular order:

1. Tally the number of effect sizes reported by each meta-analysis in addition to the number of studies included.

2. Expand the number of studies sampled from journals other than the RER and the PB.

3. Draw studies from other databases, at least MEDLINE, to check if trends and tendencies are different. With this also find a library which has most of the journals covered by MEDLINE (a real stumbling block; the idea of using MEDLINE was considered but then abandoned for this study).

4. Code each meta-analysis according to whether it included unpublished studies.

5. Code each meta-analysis according to indication of what source served as major reference point for meta-analysis methodology, whether Glass et al., Hedges and Olkin, Hunter and Schmidt, Rosenthal, or someone else.

6. Code for any indication of testing a priori hypotheses.

7. Pay more attention to the reported conclusions and try to rate them on substantive significance. Then try to relate the ratings to other characteristics, such as major point of reference (above).

8. For reasons not limited to an attempt to increase reliability of coding, make this something other than a solo effort. What are graduate students for anyway?

As well as figuring out what might have been done differently, there can be speculation about a more ambitious study. Assuming a more global domain of meta-analyses has been determined and clarified and kinks in the sampling procedure can be worked out, a quantitative synthesis of meta-analyses could be attempted (let us hope and pray, probably futilely, that the term "meta-meta-analysis" would be avoided). Collected as dependent variables would be overall effect sizes as well as number of significant associations of moderator variables with effect sizes. Coded study features, such as those considered for this study, would serve as moderator variables for this overall synthesis.

Such a study could shed light on whether the Hunter-Schmidt procedures do in fact lead to an appreciable smaller variance of effect sizes and fewer significant associations of moderator variables with effect sizes than the Hedges-Olkin procedures, as implied by Raudenbush (1991). Finding a difference, however, would

still not indicate which approach is more valid.

Reporting of Meta-Analyses: As far as reporting meta-analyses is concerned, this study has few implications, certainly little beyond the recommendations of Cooper (1989). And given the state of the art of meta-analytic theory and the occurrence of conflicting results from similar meta-analyses, this study in no way supports a call for greater standardization of procedures; we need to know what is right before deciding what to standardize. However, there is one implication that could help the consumer. That is for the authors of reviews to realize that a good part of the potential audience is not of the same meta-analytic camp as they are. One who is in the Hunter-Schmidt camp, for instance, should try to explain as clearly and simply as possible what it means to correct for artifacts and why and maybe also why an overall test of effect size homogeneity was not used. For the consumer, this would not make the meta-analytic fields any smaller but it could make traversing them smoother.

REFERENCES

Abrami, P. C., Cohen, P.A., & d'Apollonia. Implementational problems in meta-analysis. *Review of Educational Research, 58(2). 151-179.*

Cooper, H. M.(1989). *Integrating Research: A Guide for Literature Reviews(2nd ed.).* Newbury Park, Calif: Sage.

Glass, G. V (1976). Primary, secondary, and meta-analysis of research. *Educational Researcher, 5(10),* 3-8.

Glass, G. V, McGaw, B., & Smith, M.L. (1981). *Meta-Analysis in Social Research.* Beverly Hills, Calif: Sage.

Hunter, J. E. & Schmidt, F. L. (1990). *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings.* Newbury Park, Calif: Sage.

Raudenbush, S. W. (1991). Book review of *Methods of Meta-Analysis* by J. E. Hunter & F. L. Schmidt. *Educational Researcher,* 20(7), 33-37.

TABLE I

TALLIES OF CODED STUDY FEATURES

CODE	STUDY FEATURE	N	% of 89
a	Published in 1986	12	13.5%
b	Published in 1987	15	16.9%
c	Published in 1988	12	13.5%
d	Published in 1989	15	16.9%
e	Published in 1990	17	19.1%
f	Published in 1991	16	18.0%
g	Published in 1992	2	2.3%
h	Reference to previous meta-analysis, similar topic	36	40.5%
j	Inclusion (or exclusion) criteria described	73	82.0%
k	ERIC used	34	38.2%
l	PsychAbs/PsychInfo/PsychLit Used	50	56.2%
m	Dissertation Abstracts used	30	33.7%
o	MedLine used	7	7.9%
n	Other computer data base used	18	20.2%
q	Number of studies synthesized		
r	Mean differences aggregated	66	74.2%
s	Correlations aggregated	17	19.1%
t	Other statistics aggregated	24	27.0%
u	Effect size corrected for sample size	45	50.6%
v	Effect size corrected for attenuation	7	7.9%
w	Effect size corrected for other artifacts	13	14.6%
y	No corrections of effect size reported	31	34.8%
z	Moderator variables coded	83	93.3%
aa	Stand. mean diff., any standard deviation	55	61.8%
bb	Stand. mean diff., control group standard deviation	22	24.7%
cc	Effect size reported as correlation	15	16.9%
dd	Effect size reported as Z	8	8.9%
ee	Other mode for reporting effect size	8	8.9%
ff	Means not the statistic aggregated	22	24.7%
gg	Test of homogeneity for moderator variables	47	51.8%
hh	t test used for moderator variable analysis	12	13.5%
jj	ANOVA used for moderator variable analysis	18	20.2%
kk	significance of separate correlations tested	11	12.4%
ll	multiple regression used for moderator analysis	12	13.5%
mm	Successive homogeneity tests for moderator analysis	21	23.6%
pp	Other methods used for moderator variable analysis	11	12.4%
qq	No significance tests on moderator variables	9	10.1%

*Variables coded "1" for present, "0" for absent except for number of studies.

TABLE II

STUDIES IN SAMPLE BY PUBLICATION AND YEAR

	1986	1987	1988	1989	1990	1991/2	
Psych Bull	4	7	8	5	10	9	43
Rev of Ed Res	1	2	2	5	3	3	18
Other	5	6	2	5	4	6	28
	12	15	12	15	17	~~17~~ 18	

TABLE III

NUMBER OF META-ANALYSES WHICH RATED QUALITY OF INDIVIDUAL STUDIES

	1986	1987	1988	1989	1990	1991/2
Studies which Rated Quality	4	3	0	4	1	4
Total Number of Studies	12	13	12	15	17	18

TABLE IV

STATISTICAL TESTS USED FOR MODERATOR VARIABLE ANALYSIS

	1986	1987	1988	1989	1990	1991/2	TOTAL
t test	3	2	1	1	4	1	12
ANOVA	3	5	3	1	4	4	18
Correlation	2	1	0	2	3	3	11
Multiple Regression	1	2	1	3	4	1	12
Successive Homogeneity	2	4	4	2	6	3	21
Other	1	3	2	0	2	3	11
Number of Studies	12	15	12	15	17	18	89

TABLE V

STUDIES WHICH TESTED FOR HOMOGENEITY OF EFFECT SIZES

	1986-88	1989-9	
Homogeneity Test	14	33	47
No Homogeneity Test	25	17	42
	39	50	89

$$X^2_{(1\ d.f.)} = 9.78 \quad p < .01$$

APPENDIX TO TRENDS IN PUBLISHED META-ANALYSES

Burton L. Grover
Western Washington University

AERA, Atlanta, GA.
April 1993

Studies from PSYCHOLOGICAL BULLETIN
1986-1989

101 Achenbach, Thomas, Stephanie McConaughty, and Catherine Howell."Child/Adolescent Behavioral and Emotional Problems: Implications of Cross-Informant Correlations for Situational Specificity," Psychological Bulletin, Vol. 101, No. 2, March 1987, pp. 213-232.

102 Amato, Paul and Bruce Keith. "Parental Divorce and the Well-Being of Children: A Meta Analysis," Psychological Bulletin, Vol. 110, No. 1, July 1991, pp. 26-46.

103 Booth-Kewley Stephanie and Howard Friedman. "Psychological Predictors of Heart Disease: A Quantitative Review," Psychological Bulletin, Vol. 101, No. 3, May 1987, pp. 343-362.

104 Bornstein, Robert, "Exposure and Effect: Overview and Meta-Analysis of Research, 1968-1987," Psychological Bulletin, Vol. 106, No. 2 September 1989, pp. 265-289.

105 Bowers, Thomas and George Clum. "Relative Contributions of Specific and Non-Specific Treatment Effects Meta-Analysis of Placebo-Controlled Behavior Therapy Research," Psychological Bulletin, Vol. 103, No. 3, May 1988. pp. 315-323.

106 Bushman, Brad and Harris Cooper. "Effects of Alcohol and Human Aggression: An Integrative Research Review," Psychological Bulletin, Vol. 107, No. 3, May 1990, pp. 341-354.

107 Carlson, Michael and Norman Miller. "Explanation of the Relation Between Negative Mood and Helping," Psychological Bulletin, Vol. 102, No. 1, July 1987, pp. 91-108.

108 Cohn, Lawrence. Sex Differences in the Course of Personality Development: A Meta Analysis," Psychological Bulletin, Vol. 109, No. 2, March 1991, pp. 252-266.

109 Durlak, Joseph; Teresa Fuhrman; and Claudia Lampman. "Effectiveness of Cognitive-Behavior Therapy for Maladapting Children: A Meta-Analysis," Psychological Bulletin, Vol.110, No. 2, September 1991, pp. 204-14.

110 Dush, David, Michael Hirt, and Harold Schroeder. "Self-Statement Modification in the Treatment of Child Behavior Disorders: A Meta-Analysis," Psychological Bulletin, Vol. 106, No. 1, July 1989, pp. 97-108.

111 Eagley, Alice; Richard Ashmore; Mona Makhijani; and Laura Longo. "What Is Beautiful is Good, But ... : A Meta-Analytic Review of Research on the Physical Attractiveness Stereotype," Psychological Bulletin, Vol. 110, No. 1, September 1991, pp 109-128.

112 Eagley, Alice and Blair Johnson. "Gender and Leadership Style: A Meta-Analysis," Psychological Bulletin, Vol. 108, No. 2, September 1990, pp. 223-256.

113 Eaton, Warren, and Leslie Reid Enns. "Sex Differences in Human Motor Activity Level," Psychological Bulletin, Vol. 100, No. 1, July 1986, pp. 19-28.

114 Feingold, Alan, "Matching for Attractiveness in Romantic Partners and Same-Sex Friends: A Meta-Analysis and Theoretical Critique," Psychological Bulletin, Vol. 104, No. 2, September 1988, pp. 226-235.

115 Ford, Kevin; Kurt Kraiger and Susan Schechtman. "Study of Race Effects in Objective Indices and Subjective Evaluation of Performance: A Meta-Analysis of Performance Criteria." Psychological Bulletin, Vol. 99, No. 3, May 1988, pp 330-7.

116 Hardaway, Richard. "Subliminally Activated Fantasies: Facts and Artifacts," Psychological Bulletin, Vol 107, No. 2, March 1990, pp 177-185.

117 Hazelbrigg, Mark; Harris Cooper; and Charles Borduin. "Evaluating the Effectiveness of Family Therapies: An Integrative Review and Analysis." Psychological Bulletin, Vol. 101, No. 3, 1987, pp 428-422.

118 Hulin, Charles; Rebecca Henry, and Sharon Noon. "Adding a Dimension: Time as a Factor in the Generalizability of Predictive Relatioships." Psychological Bulleitn, Vol. 107, No. 3, May 1990. pp 328-340.

119 Hull, Joy and Charles Bond, Jr. "Social and Behavioral Consequences of Alcohol Consumption and Expectancy" A Meta-Analysis," Psychological Bulletin, Vol. 99, No. 3, May 1986, pp 347-360.

120 Hyde, Janet; Elizabeth Fennema; and Susan Lamon. "Gender Differences in Mathematics Performance: A Meta-Analysis," Psychological Bulletin, Vol. 107, No. 2, March 1990, pp 139-155.

121 Hyde, Janet and Marcia Linn. "Gender Differences in Verbal Ability: A Meta-Analysis," Psychological Bulletin, Vol. 104, No. 1, July 1988, pp. 53-68.

122 Johnson, Blair and Alice Eagly. "Effects of Development on Persuasion: A Meta-Analysis," Psychological Bulletin, Vol. 106, No. 2, September 1989, pp. 290-314.

123 Kaylor, Jeffrey, Daniel King, and Lynda King. "Psychological Effects of Military Service in Vietnam: A Meta-Analysis," Psychological Bulletin, Vol. 102, No. 2, September 1987, pp. 257-271.

143 Lytton, Hugh and David Romney, "Parents' Differential Socialization of Boys and Girls: A Meta-Analysis. "Psychological Bulletin, Vol. 109, No. 2, March 1991, pp. 267-296.

124 Mathieu, John and Dennis Zajac, "A Review and Meta-Analysis to the Antecedents, Correlates and Consequences of Organizational Commitment." Psychological Bulletin, Vol. 108, No. 2, September 1990, pp 171-194.

125 Matthews, Karen. "Coronary Heart Disease and Type A Behaviors: Update on an Alternative to the Booth-Kewley and Friedman (1987) Quantitative Review," Psychological Bulletin, Vol. 104, No. 3, November 1988, pp. 373-380.

126 McCartney, Kathleen; Monica Harris; and Frank Berniere, "Growing Up and Growing Apart: A Developmental Meta-Analysis of Twin Studies," Psychological Bulletin, Vol. 107, No. 2, March 1990, pp. 226-237.

127 Miller, Paul and Nancy Eisenberg. "The Relation of Empathy to Aggressive and Externalizing/Antisocial Behavior," Psychological Bulletin, Vol. 103, No. 3, May 1988, pp. 324-344.

128 Miller, Todd; Charles Turner, Scott Tindale, Emil Posavac, and Bernard Dugoni. "Reasons for the Trend Toward Null Findings in Research on Type A Behavior." Psychological Bulletin, Vol. 110, No. 3, November 1991, pp 469-85.

129 Nicholson, Robert and Karen Kugler. "Competent and Incompetent Criminal Defendants: A Quantitative Review of Comparative Research," Psychological Bulletin, Vol. 109, No. 3, May 1991, pp 355-70.

130 Okun, Morris; Robert Olding; and Catherine Cohn. "A Meta-Analysis of Subjective Well-Being Interventions Among Elders," Psychological Bulletin, Vol. 108, No. 2, September 1990, pp 257-266.

131 Parker, Kevin; John Hunsley; and Karl Hansen. "MMPI, Rorschach, and WAIS: A Meta-Analytic Comparison of Reliability, Stability, and Validity," Psychological Bulletin, Vol. 103, No. 3, May 1988, pp. 367-373.

132 Powers, Donald. "Relations of Test Item Characteristics to Test Preparation/Test Practice Effects: A Quantitative Summary," Psychological Bulletin, Vol. 100, No. 1, July 1986, pp. 67-77.

133 Premack, Steven and John Hunter, "Individual Unionization Decisions," Psychological Bulletin, Vol. 103, No. 2, March 1988, pp. 223-234.

134 Raz, Sarah and Natalie Raz. "Structural Brain Abnormalities in the Major Psychoses: A Quantitative Review of the Evidence from Computerized Imaging," Psychological Bulletin, Vol. 108, No. 1, July 1990, pp. 93-108.

135 Robinson, Leslie; Jeffrey Berman; and Robert Meimeyer. "Psychotherapy for the Treatment of Depression: A Comprehensive Review of Controlled Outcome Research," Psychological Bulletin, Vol 105, No. 1, July, 1990, pp 30-49.

136 Rubonis, Anthony and Leonard Bickman. "Psychological Impairment in the Wake of Disaster: The Disaster Psychopathology Relationship," Psychological Bulletin, Vol. 109, No. 3, May 1991, pp. 384-399.

137 Searleman, Alan, Stanley Coren, and Clare Porac. "Relationship Between Birth Order, Birth Stress, and Lateral Preferences," Psychological Bulletin, Vol. 105, No. 3, May 1989, pp. 397-408.

138 Stebloy, Nancy. "Helping Behavior in Rural and Urban Environments: A Meta-Analysis," Psychological Bulletin, Vol. 102, No. 3, November 1987, pp. 346-356.

139 Swim, Janet, Eugene Borgiclo, Geoffrey Maruyama, and David Myers, "Joan McKay versus John McKay: Do Gender Stereotypes Bias Evaluations," Psychological Bulletin, Vol. 105, No. 3, May 1989, pp. 409-429.

140 Wood, Wendy. "Meta-Analytic Review of Sex Differences in Group Performance," Psychological Bulletin, Vol. 102, No. 1, July 1987, pp. 53-71.

141 Wood, Wendy; Nancy Rhodes; and Melanie Whelan. "Sex Differences in Positive Well-Being: A Consideration of Emotional Style and Marital Status," Psychological Bulletin, Vol. 106, No.1 2, September 1989, pp. 249-264.

142 Wood, Wendy; Frank Wong; and Gregory Chachere. "Effects of Media Violence on Viewers' Aggression in Unconstrained Social Interaction," Psychological Bulletin, Vol 109, No. 3, May 1991, pp. 371-83.

Studies from THE REVIEW OF EDUCATIONAL RESEARCH
1986-1991

201 Bangert-Downs, Robert L., Chen-Lui Kulik, James Kulik, and Mary Teresa Morgan. "The Instructional Effect of Feedback in Test-Like Events," Review of Educational Research, Vol. 61, No. 2, Summer 1991, pp. 213-238.

202 Becker, Betsy Jane. "Coaching for the Scholastic Aptitude Test: Further Synthesis and Approval," Review of Educational Research, Vol. 60, No. 3, Fall 1990, pp. 373-417.

203 Chapman, James. "Learning Disabled Children's Self-Concepts," Review of Educational Research, Vol. 58, No. 3, Fall 1988, pp. 347-371.

204 Falchikov, Nancy and David Boud. "Student Self-Assessment in Higher Education: A Meta-Analysis," Review of Educational Research, Vol. 59, No. 4, Winter 1989, pp. 395-430.

218 Feingold, Alan. "Sex Differences in Variability in Intellectual Abilities: A New Look at an Old Controversy." Review of Educational Research. Vol. 26, No. 1, Spirng 1992, pp. 61-4

205 Friedmamn, Lynn. "Mathematics and the Gender Gap: A Meta-Analysis of Recent Studies on Sex Differences in Mathematical Tasks," Review of Educational Research, Vol. 59, No. 2, Summer 1989, pp. 185-213.

206 Fuchs, Douglas and Lynn Fuchs. "Test Procedure Bias: A Meta-Analysis of Examiner Familiarity Effects," Review of Educational Research, Vol. 56, No. 2, Summer 1986, pp. 243-262.

207 Hamaker, Christiaan. "The Effect of Adjunct Questions on Prose Learning," Review of Educational Research, Vol. 56, No. 2, Summer 1986, pp. 212-242.

208 Hoge, Robert and Theodore Coladarci. "Teacher-Based Judgements of Academic Achievement: A Review of Literature," Review of Educational Research, Vol. 59, No. 3, pp. 297-313.

209 Kulik, Chen-Lui, James Kulik, and Robert Bangert-Downs. "Effectiveness of mastery Learning Programs: A Meta-Analysis," Review of Educational Research, Vol. 60, No. 2, Summer 1990, pp. 265-299.

210 Lundeberg, Mary, and Paul Fox. "Do Laboratory Findings on Test Expectancy Generalize to Classroom Outcomes," Review of Educational Research, Vol. 61, No. 1, Spring 1991, pp. 94-106.

211 Ross, John A. "Controlling Variables: A Meta-Analysis of Training Studies," Review of Education Research, Vol. 58, No. 4, Winter 1988, pp. 405-437.

212 Slavin, Robert. "Ability Grouping and Student Achievement in Elementary Schools: A Best-Evidence Syntheses," Review of Educational Research, Vol. 57, No. 3, Fall 1987, pp. 293-336.

213 Slavin, Robert. "Mastery Learning Reconsidered," Review of Educational Research, Vol. 57, No. 2, Summer 1987, pp. 175-213.

214 Slavin, Robert. "Achievement Effect of Ability Grouping in Secondary Schools: A Best Evidence Syntheses," Review of Educational Research, Vol. 60, No. 3, Fall 1990, pp. 471-499.

215 Stahl, Steven A. and Marilyn Fairbanks. "The Effects of Vocabulary Instruction: A Model-Based Meta-Analysis," Review of Educational Research, Vol. 56, No. 1, 1986, pp. 72-110.

216 Stahl, Steven and Patricia Miller. "Whole Language and Language Experience Approaches for Beginning Reading: A Quantitative Research Synthesis," Review of Educational Research, Vol. 59, No. 1, Spring 1989, pp. 87-116.

217 Whitener, Ellen M. "A Meta-Analytic Review of the Effect on Learning of the Interaction Between Prior Achievement and Instructional Support," Review of Educational Research, Vol. 59, No. 1, Spring 1989, pp. 65-86.

Studies from Sources Other Than
PSYCHOLOGICAL BULLETIN or
REVIEW OF EDUCATIONAL RESEARCH
1986-1992

301 Adair, John; Donald Sharpe; and Cam-Loi Huynh. "Hawthorne Control Procedures in Educational Experiments: A Reconsideration of Their Use and Effectiveness." Paper presented to the Annual Meeting of the American Educational Research Association, Washington, D.C., April 1987. (ERIC No. ED 286926).

302 Christiansen-Szalanski, Jay and Cynthia Willham. "The Hindsight Bias," Organizational Behavior and Human Decision Processes. Vol.48, No. 1, February 1991, pp 147-168.

303 Feingold, Alan. "Gender Differences in Effects of Physical Attractiveness on Romantic Attraction: A Comparison Across Five Research Paradigms." Journal of Personality and Social Psychology, Vol. 59, No. 5, 1990, pp 981-993.

307 Fletcher, J.O. "Effectiveness and Cost of Interactive Videodisc Instruction in Defence Training and Education," IDA paper P-2372, Institute for Defense Analyses. (ERIC No. 326194).

304 Fuchs, Lynn and Douglas Fuchs. "Effects of Systematic Formative Evaluation: A Meta-Analysis," Exceptional Children, Vol. 53, No. 3, November 1986, pp 199-229.

305 Gerlsma, Coby; Paul Emmelkomp; and William Arrindell, "Anxiety, Depression, and Perception of Early Parenting: A Meta-Analysis," Clinical Psychology Review, Vol. 10, No. 3, 1990, pp 251-277.

306 Holloway, Elizabeth and Bruce Wampold. "Relation Between Conceptual Level and Counseling-Relating Tasks: A Meta-Analysis," Journal of Counseling Psychology, Vol. 33, No. 3, 1986, pp 310-319.

308 Holweg, Kurt and Howard Markman, "Effectiveness of Behavioral Marital Therapy: Empirical Status of Behavioral Techniques in Preventing and Alleviating Marital Distress," Journal of Consulting and Clinical Psychology, Vol. 56, No. 3, 1988, pp 440-447.

309 Matt, Georg; Carmelo Vazquez; and Keith Campbell. "Mood Congruent Recall of Affectively Toned Stimuli; A Meta-Analytic Review," Clinical Psychology Review, Vol. 12, No. 2, 1992, pp 227-255.

310 Mullen, Brian et al. "Boundaries Around Group Interaction: A Meta-Analysis Integration of the Effects of Group Size," The Journal of Social Psychology, Vol 131, No. 2, 1991, pp 271-283.

311 Multon, Karen; Steven Brown; and Robert Lent. "Relation of Self-Efficacy Beliefs to Academic Outcomes: A Meta-Analytic Investigation," Journal of Counseling Psychology, Vol. 38, No. 1, January 1991, pp 30-38.

312 Murphy, Kevin, and William Balzer. "Rater Errors and Rating Accuracy," Journal of Applied Psychology, Vol. 74, No. 4, August 1989, pp 619-626.

313 Noland, Theresa and Bob Tyler. "The Effects of Ability Grouping: A Meta Analysis." Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, April 1986. (ERIC No. Ed 268 451).

314 Perlman, Daniel. "Age Differences in Loneliness: A Meta-Analysis." Paper presented to the Convention of the American Psychological Association, Boston, August 1990 (ERIC No. ED 326 767).

315 Salzman, Stephanie, "Father Absence, Socioeconomic Status and Race; Relations to Children's Cognitive Performance." Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, April 1988 (ERIC No. ED 296 939).

316 Salzman, Stephanie. "Meta-Analysis of Studies Investigating the Effects of Father Absence on Children's Cognitive Performance." Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C., April 1987, (ERIC No. ED 283 883)

317 Samson, Gordon; Bernadette Strykowski; Thomas Weinstein; and Herbert Walberg. "The Effects of Teacher Questioning Levels on Student Achievement: A Quantitative Synthesis." Journal of Educational Research, Vol. 80, No. 5, May-June 1987, pp 290-295.

318 Schueger, James; Karen Zarella; and Annette Hotz. "Factors that Influence the Temporal Stability of Personality by Questionnaire," Journal of Psychology and Social Psychology, Vol. 56, No. 5, May 1989, pp 777-783.

319 Suls, Jerry and Choi Wan. "Effects of Sensory and Procedural Information on Coping with Stressful Medical Procedures and Pain: A Meta-Analysis," Journal and Consulting and Clinical Psychology, Vol. 57, No. 3, 1989, pp 372-379.

320 Svartberg, Martin and Tore Stiles. "Comparative Effects of Short-Term Psychodynamic Psychotherapy: A Meta-Analysis," Journal of Consulting and Clinical Psychology, Vol. 59, No. 5, October 1991, pp 704-714.

320 Swartout, David and David Synk. "The Effect of Age, Education and Work Experience on General Aptitude Test Battery Validity and Test Scores," USES Test Research Report, No. 50, 1987, (ERIC No. ED 310 171)

321 Tenenbaum, Gerson and Ellen Goldring. "A Meta-Analysis of the Effect of Enhanced Instruction: Cues, Participation, Reinforcement and Feedback, and Correctives on Motor Skill Learning," Journal of Research and Development of Education, Vol. 22, No. 3, Spring 1989, pp 53-64.

322 Tobler, Nancy. "Meta-Analysis of 143 Adolescent Drug Prevention Programs: Quantitative Outcome Results of Programs Participants Compared to a Control or Comparison Group," Journal of Drug Issues, Vol. 16, No. 4, Fall 1986, pp 537-567.

326 Van Sickle, Ronald. "A Quantiative Review of Research on Instructional Gaming" A Twenty-Year Perspective." Theory and Research in Social Education, Vol. 14, No. 3, Summer 1986, pp 245-264.

323 Wagner, John III and Richard Gooding. "Shared Influences and Organizational Behavior: A Meta-Analysis of Situational Variables Expected to Moderate Participation-Outcome Relationships," Academy of Management Journal, Vol. 30, No. 3, September 1987, pp 524-541.

324 Wellman, Henry; David Cross, and Karen Bortsch. "Infant Search and Objective Permanence: A Meta-Analysis of the A-Not-B Error." Monographs of the Society for Research in Child Development, Vol. 51, No. 3, Serial No. 214, 1987.

325 Witters-Churchill, Laurie and Lee Witters. "Hearing-Impaired Students' Performance on the Piagetian Liquid Horizontality Test: An Analysis and Synthesis." Paper presented at the Internatioanl Symposium on Cognition, Education, and Deafness, Washington, D.C., July 1989 (ERIC No. 313 845).

327 Yammarino, Francis: Steven Skinner, and Terry Childs, "Understanding Mail Survey Response Behavior: A Meta-Analysis," Public Opinion Quarterly. No. 55, No. 4, Winter 1991, pp 613-639.

CODING OF INDIVIDUAL STUDIES

PU BID	ABCDEFGHJKLMON	ABCDEFGHJKLMPQ QRSTUVWYZX
301	01000001000000	44100100000100000100000100
302	00000100111101122100010010101000100100000	
303	00001000111100	23101100010100000000000000
304	10000000111100	21100101011110000100100000
305	00001000101000	32110110010101000100000100
306	10000000101000	29100000011100000011100000
307	00001000111001	28100000110100000100000000
308	00100000100000	24100000110111000010000000
309	00000010101000	15001101010000011100000001
310	00000101100000000600100011000010000000000	
311	00000100111100	39010100011000001100000100
312	00010000100001	10010110010000001100010000
313	10000000100000	50100000111110000010000000
314	00001000000000	14010000010000001000100000
315	00100001100000	82100000110110000001000000
316	0100000010000013710000011111000000100000	
317	01000001110100	14100000010110100001000000
318	00010000000000	89010000110000001000010000
319	00010000101010	21100101010100000100001000
320	00000100101010	19100001011001000100000010
320	0100000010000014310000010000000100100000	
321	00010000000000	16100100010110000100000000
322	10000000100001	98100000010110000000001000
323	01000001100000	70100100010000001110001000
324	01000000101000	30001000110000001000000000
325	00010001110000	71000001001000000000000000
201	00000101110100040100000110110000010100000	
202	00001001110100048001000110000111100010000	
203	00100000000000	21100000110110000000000001
204	00010000110111	57111100011110011100000000
205	00010001011100	77100100010100000100010000
206	10000000111100	22100000111110000100100000
207	10000001111000	61001110100000001010000000
208	00010000111000	16010000110000001000000001
209	00001001110100108101000110110000011101000	
210	00000100001101107100100010100000000000010	
211	00100000110101	65100100010111111100100000
212	01000001111100	14100000111110000000000000
213	01000001110100	16100000110110000000000000
214	00001001110100	29100001010110000000000000
215	10000001110000	52100000110110000000000010
216	00010001110100	65100000111110000111100000
217	00010000110000	22001100000000001100000000
101	0100000010100011901010001000000100000000	
102	0000010010100109210110001010000010100000	
103	01000000101010	87001000110001000000000010
104	0001000010100013411000011000110000000000	
105	00100001101000	69100000110110000000101000

```
106 00001001101101 30100100010100000010001100
107 01000000101000 44100000110100000000011010
108 00000101101100 65110100010100000010100000
109 00000100100100 64100100011100000010000100
110 00010001101100 48100100010100000000000001
111 00000101111111 69100100010100000010100000
112 00001000101101144100100010100000010110000
113 10000000101000 90100100010100000010010000
114 00100000011100 18010100010001100000000110
115 10000001100000 53100100010001000010000100
116 00001000101100 56100110010100000010000001
117 01000000111000 20101100010100000010000100
118 00001001100000 41001011010000011100000010
119 10000000100000 34100000110100000010000100
120 00001001111100010010010001010000010001100
121 00100000111000165100001010100000010000100
122 00010000111101 38100100010100000010000000
123 01000000101100 67100000011100000001101000
124 00001000101001124010010010000000111000100
125 00100001100000 16001100010000100100000000
126 00001000101000103010100010000000100000100
127 00100000011000 29101100010001000100000100
128 00000101100000 39101101010001000100100000
129 00000100001011 30101100010001010000000001
130 00001001111001 58101000111100000010000100
131 00100001100000411011100010000001100000100
132 10000001110100 10100000110110000000010000
133 00100000100000 14010001010000000110000010
134 00001000100000 93100100010100000001010010
135 00001001101000 58100100010100000001000000
136 00000100101010 52100100010001000100001000
137 00100000000000 43001001010001000000000001
138 01000000001001 35100100010000100000000110
139 00010000101000123110001011100000010000100
140 01000000001000 52101100010100000010100000
141 00010001101001 93111001101000000100100000
142 00000101111100 23100100010100000010100000
143 00000101001100172100100011100000010000010
218 00000011000000  80010001100000010000000001
326 10000001010000 22100000110110000000000001
327 00000101111100111500110101000100110000100
```

One line per study. The first three numbers indicate the identification number of the study as listed in the bibliography.

Meanings of code letters for variables may be found on Table I of the paper.